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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,305	10/06/2003	Joseph Scott Digangi	4345-35	4161
23117	7590	06/06/2005	EXAMINER	
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			TO, TOAN C	
			ART UNIT	PAPER NUMBER
			3616	

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/678,305

Applicant(s)

DIGANGI ET AL.

Examiner

Toan C To

Art Unit

3616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/02/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Recitation "a micro-gas generator is disposed within said initiator" is unclear, since claim 1 recites "a micro-gas generator or initiator", therefore it is not known whether or not "a micro-gas generator" in claim 12 is same as "a micro-gas generator" in claim 1. Examiner suggests to delete "a micro-gas generator is disposed within said initiator".

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5, 8-10, 12, 13-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Rink et al (U.S. 5,964,479).

Rink et al discloses a gas generator comprising: a pressure vessel (314) containing a gas under a first predetermined pressure (pressure of mixture gas in

Art Unit: 3616

chamber 312); an initiator housing (360) secured to and closing one end of said pressure vessel (314), the initiator housing (360) having an opening (346) at the inner end thereof closed by an initiator rupture disc (348) constructed to rupture at a second predetermined pressure in the initiator housing (360) greater than the first predetermined pressure; a micro gas generator or initiator (370) disposed within the initiator housing; a manifold (326) secured to and closing the other end of said pressure vessel (314), the manifold (326) having an opening (336) at the inner end thereof closed by a manifold rupture disk (344) constructed to rupture at a third predetermined pressure greater than the first predetermined pressure; whereby upon the firing of the micro gas generator or initiator, the gas pressure in the initiator housing (360) increases to or exceeds the second predetermined pressure to rupture the initiator rupture disk (346) and create a pressure wave that travels through the pressure vessel to create a localized pressure at the manifold rupture disk (344) that equals or exceeds the third predetermined pressure to rupture the manifold rupture disk and allow flow of gas through the manifold (326) before the gas in the pressure vessel is significantly heated and pressurized by the gas flow from the initiator housing.

As to claims 2-3, Rink et al discloses a gas generator, wherein the first predetermined pressure is approximately 4,000-8,000 psi (see column 6, line 55, and column 13, line 52), and the second predetermined pressure is approximately two times higher than said first predetermined pressure (as best shown in figure 6, the initiator rupture disc 346 fails slightly before 150 ms when the pressure/second pressure in the reaction chamber is approximately 15000 psi which is approximately two time higher

Art Unit: 3616

than the initial pressure/first pressure in the stored gas chamber); wherein the third predetermined pressure is approximately 1.8 times higher than the first predetermined pressure (see column 14, lines 45-46).

As to claims 4-5, Rink et al discloses a gas generator, wherein said gas under a first predetermined pressure is a gas mixture of argon and helium or nitrogen and helium (see column 5, lines 15-32).

As to claim 8-9, Rink et al discloses a gas generator, wherein the initiator housing (360) is welded to the pressure vessel (314); the manifold (326) is welded to the pressure vessel (314).

As to claim 10, Rink et al discloses a gas generator, wherein the manifold (326) is constructed to provide for radial flow (340) therefrom.

With respect to claim 12, as best understood by the examiner, Rink et al discloses a gas generator, wherein the micro-gas generator (370) is disposed within the initiator housing (360) and is constructed to generate sufficient heat to prevent liquification of the gas in the pressure vessel upon rupture of the initiator rupture disk (346) and the manifold rupture disk (344).

As to claim 13, Rink et al discloses a method of generating gas for a device to be inflated or pressurized, comprising: providing a pressure vessel (314) containing a gas under a first predetermined pressure; providing an initiator housing (360) closing one end of the pressure vessel (314) and having an opening (346) at the inner end thereof closed by an initiator rupture disk (348) constructed to rupture at a second predetermined pressure in said initiator housing (360) greater than the first

predetermined pressure; providing a micro-gas generator or initiator (370) within the initiator housing (360); providing a manifold (326) closing the other end of the pressure vessel, said manifold (326) having an opening (336) at the inner end thereof closed by a manifold rupture disk (344) constructed to rupture at a third predetermined pressure greater than the first predetermined pressure; and firing the micro-gas generator or initiator (370) to increase the gas pressure in the initiator housing (360) to a value equal to or exceeding the second predetermined pressure to rupture the initiator rupture disk (344) and create a pressure wave that travels through the pressure vessel (314) to create a localized pressure at the manifold rupture disk (344) that equals or exceeds the third predetermined pressure to rupture the manifold disk (344) and allow flow of gas through the manifold (326) before the gas in said pressure vessel is significantly heated and pressurized by the gas flow from the initiator housing.

As to claims 14-15, Rink et al discloses a method of generating gas, wherein the first predetermined pressure is approximately 4,000-8,000 psi (see column 6, line 55, and column 13, line 52), and the second predetermined pressure is approximately two times higher than said first predetermined pressure (as best shown in figure 6, the initiator rupture disc 346 fails slightly before 150 ms when the pressure/second pressure in the reaction chamber is approximately 15000 psi which is approximately two time higher than the initial pressure/first pressure in the stored gas chamber); wherein the third predetermined pressure is approximately 1.8 times higher than the first predetermined pressure (see column 14, lines 45-46).

As to claims 16-18, Rink et al discloses a method of generating gas, wherein 'said gas under a first predetermined pressure is a gas mixture of argon and helium or nitrogen and helium (see column 5, lines 15-32); wherein the flow of gas through said manifold upon rupture of said manifold rupture disk is at a temperature of less than approximately 21.degree. C. (in Rink et al, the gas generator 310 is similar with the gas generator of the present invention in structures and material of gas mixture disposed therein; therefore, the temperature of gas flows through the diffuser 310 of Rink et al should be similar to the temperature as claimed).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rink et al in view of Starozihitsky et al (U.S. 6,364,355).

Rink et al discloses every element of the invention as discussed above except that the pressure vessel is formed of a lightweight light strength material; wherein the material is low carbon steel or aluminum.

Starozihitsky et al teaches the invention wherein the pressure vessel is formed of a lightweight light strength material; wherein the material is low carbon steel or aluminum. It would have been obvious design choice to one having ordinary skill in the

Art Unit: 3616

art at the time the invention was made to make the pressure vessel of Sink et al by low carbon steel material as taught by Starozihitsky et al in order to ensure performance of the gas generator for protecting occupant, since it has been held to be within the general skill in of a worker in the art to select a known material on the basis of its suitability for the indented use as a matter of obvious design choice.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rink et al in view of Green et al (U.S. 6,286,864)

Rink et al discloses every element of the invention as discussed above except that the manifold is constructed to provide for axial flow therefrom.

Green et al teaches the invention wherein the manifold (42) is constructed to provide for axial flow (46) therefrom. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the gas generator of Rink et al by replaced their radial openings with the axial openings as taught by Green et al in order to inflate the occupant protection device for protecting occupant.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan C To whose telephone number is (571) 272-6677. The examiner can normally be reached on Mon-Fri (8:00-5:00).

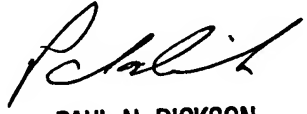
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Dickson can be reached on (571) 272-6669. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



Art Unit: 3616

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTo  
May 12, 2005

 5/14/05  
PAUL N. DICKSON  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3600